Complete Summary

GUIDELINE TITLE

Preventive services for children and adolescents.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Preventive services for children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2008 Oct. 71 p. [141 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Institute for Clinical Systems Improvement (ICSI). Preventive services for children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2007 Oct. 80 p. [152 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Preventable diseases or conditions such as:

- Infectious diseases such as diphtheria, tetanus, pertussis, poliomyelitis, measles, mumps, rubella, meningitis, hepatitis B, varicella, influenza, pneumococcal pneumonia, hepatitis A, rotavirus infection, human papilloma virus
- Vision loss
- Chlamydia infection

- Sudden infant death syndrome (SIDS)
- Injuries due to motor vehicles
- Disorders resulting from inborn errors of metabolism (hemoglobinopathies, phenylketonuria, hypothyroidism)
- Obesity
- Tobacco use
- Hearing loss

The guideline developers also discuss, but make no specific recommendations for, preventive services related to the following conditions:

- Alcohol use
- Elevated blood lead levels
- Breast cancer
- Cervical Cancer
- Dental and periodontal disease
- Developmental and behavioral disorders
- Domestic violence and abuse
- Dyslipidemia
- Dysplasia of the hip
- Folic acid deficiency
- Injuries due to bicycles, burns, choking, falls, firearms, poisoning, and water
- Iron deficiency
- Pregnancy prevention
- Scoliosis
- Second-hand smoke exposure
- Sexually transmitted infection (STI) (other than chlamydia)
- Skin cancer
- Undescended testicles

Preventive services are not recommended for the following conditions:

- Child maltreatment
- Anemia
- Tuberculosis

GUIDELINE CATEGORY

Counseling
Evaluation
Prevention
Risk Assessment
Screening

CLINICAL SPECIALTY

Family Practice
Internal Medicine
Obstetrics and Gynecology
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Health Plans
Hospitals
Managed Care Organizations
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To provide a comprehensive approach to the provision of preventive services, counseling, education, and disease screening for average-risk, asymptomatic individuals from birth through age 18
- To increase the percentage of patients (children and adolescents) who are on time with recommended immunizations
- To reduce missed opportunities for administering immunizations
- To decrease the percentage of patients who are behind with recommended immunizations by creating a catch-up plan
- To increase the percent of sexually active female patients under the age of 25 who are screened for chlamydia
- To increase the percentage of newborn patients who have had neonatal screening
- To increase percentage of children age four years and younger who have had vision screening

TARGET POPULATION

Average-risk, asymptomatic individuals from birth through age 18

There are occasional exceptions to this for high-risk populations where noted.

INTERVENTIONS AND PRACTICES CONSIDERED

Risk Assessment/Prevention

1. Risk stratification and health assessment
2. Using nearly every patient contact to identify and address preventive service needs
3. Immunizations, including:
    - Diphtheria, tetanus, acellular pertussis (DTaP) vaccine
    - Tetanus-diphtheria (Tdap) booster
    - Inactivated poliovirus (IPV) vaccine
    - Measles, mumps, rubella (MMR) or combined measles, mumps, rubella and varicella (MMRV) vaccine
    - Pneumococcal vaccine (PCV7)
    - Varicella vaccine
    - *Haemophilus influenzae* type b (Hib) vaccine

- Rotavirus vaccine
- Hepatitis B vaccine
- Influenza vaccine
- Hepatitis A vaccine
- Meningococcal vaccine
- Human papilloma virus (HPV) vaccine

Screening

Screening maneuvers, including:

- Neonatal screening for hemoglobinopathies, phenylketonuria, and hypothyroidism
- Chlamydia screening
- Vision screening
- Obesity screening
- Tobacco use screening and intervention in adolescents
- Hearing screening

Counseling

Counseling and education on the following topics:

- Injury prevention: motor vehicle
- Sudden infant death syndrome (SIDS)

Additionally, the following preventive services are discussed, but do not have sufficient evidence of effectiveness to warrant a recommendation:

- Alcohol use screening and counseling
- Blood lead testing
- Cervical cancer screening
- Clinical breast exams
- Counseling about dental and periodontal disease
- Assessment of developmental and behavioral disorders
- Domestic violence and abuse screening and counseling
- Screening for dyslipidemia
- Hip dysplasia screening
- Folic acid chemoprophylaxis counseling
- Injury prevention screening: bicycle, poisoning, burns, choking, falls, firearms, water
- Iron deficiency screening
- Nutritional counseling
- Preconception counseling
- Pregnancy prevention counseling
- Scoliosis screening
- Secondhand smoke exposure counseling
- Sexually transmitted infection (STI) (other than chlamydia) counseling and screening
- Skin cancer prevention counseling
- Alcohol use screening and counseling
- Undescended testicle screening

The following preventive services are discussed, but not supported by evidence and not recommended:

- Blood chemistry screening
- Child maltreatment screening
- Hemoglobin (for anemia screening)
- Tuberculin skin test (routine)
- Urinalysis

MAJOR OUTCOMES CONSIDERED

- Effectiveness of preventive screening
- Effectiveness of preventive counseling and education
- Effectiveness of immunizations
- Predictive value of screening tests

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A literature search of clinical trials, meta-analysis, and systematic reviews is performed.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Guideline Development Process

Each guideline, order set, and protocol is developed by a 6- to 12-member work group that includes physicians, nurses, pharmacists, other healthcare professionals relevant to the topic, along with an Institute for Clinical Systems Improvement (ICSI) staff facilitator. Ordinarily, one of the physicians will be the leader. Most work group members are recruited from ICSI member organizations, but if there is expertise not represented by ICSI members, one or two members may be recruited from medical groups or hospitals outside of ICSI.

The work group meets for seven to eight three-hour meetings to develop the guideline. A literature search and review is performed and the work group members, under the coordination of the ICSI staff facilitator, develop the algorithm and write the annotations and footnotes and literature citations.

Once the final draft copy of the guideline is developed, the guideline goes to the ICSI members for critical review.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

The guideline developers reviewed published cost analyses.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Critical Review Process

Every newly developed guideline or a guideline with significant change is sent to Institute for Clinical Systems Improvement (ICSI) members for Critical Review. The purpose of critical review is to provide an opportunity for the clinicians in the member groups to review the science behind the recommendations and focus on the content of the guideline. Critical review also provides an opportunity for clinicians in each group to come to consensus on feedback they wish to give the work group and to consider changes necessary across systems in their organization to implement the guideline.

All member organizations are expected to respond to critical review guidelines. Critical review of guidelines is a criterion for continued membership within ICSI.

After the critical review period, the guideline work group reconvenes to review the comments and make changes, as appropriate. The work group prepares a written response to all comments.

Approval

Each guideline, order set, and protocol is approved by the appropriate steering committee. There is one steering committee each for Respiratory, Cardiovascular, Women's Health, and Preventive Services. The Committee for Evidence-based Practice approves guidelines, order sets, and protocols not associated with a particular category. The steering committees review and approve each guideline based on the following:

- Member comments have been addressed reasonably.
- There is consensus among all ICSI member organizations on the content of the document.
- To the extent of the knowledge of the reviewer, the scientific recommendations within the document are current.
- Either a critical review has been carried out, or to the extent of the knowledge of the reviewer, the changes proposed are sufficiently familiar and sufficiently agreed upon by the users that a new round of critical review is not needed.

Once the guideline, order set, or protocol has been approved, it is posted on the ICSI Web site and released to members for use. Guidelines, order sets, and protocols are reviewed regularly and revised, if warranted.

Revision Process of Existing Guidelines

ICSI scientific documents are revised every 12 to 36 months as indicated by changes in clinical practice and literature. Every 6 months, ICSI checks with the work group to determine if there have been changes in the literature significant enough to cause the document to be revised earlier than scheduled.

Prior to the work group convening to revise the document, ICSI members are asked to review the document and submit comments. During revision, a literature search of clinical trials, meta-analysis, and systematic reviews is performed and reviewed by the work group. The work group meets for 1-2 three-hour meetings to review the literature, respond to member organization comments, and revise the document as appropriate.

If there are changes or additions to the document that would be unfamiliar or unacceptable to member organizations, it is sent to members to review prior to going to the appropriate steering committee for approval.

Review and Comment Process

ICSI members are asked to review and submit comments for every guideline, order set, and protocol prior to the work group convening to revise the document.

The purpose of the Review and Comment process is to provide an opportunity for the clinicians in the member groups to review the science behind the recommendations and focus on the content of the order set and protocol. Review and Comment also provides an opportunity for clinicians in each group to come to consensus on feedback they wish to give the work group and to consider changes needed across systems in their organization to implement the guideline.

All member organizations are encouraged to provide feedback on order sets and protocol; however, responding to Review and Comment is not a criterion for continued membership within ICSI.

After the Review and Comment period, the work group reconvenes to review the comments and make changes as appropriate. The work group prepares a written response to all comments.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the National Guideline Clearinghouse (NGC) and the Institute for Clinical Systems Improvement (ICSI): For a description of what has changed since the previous version of this guidance, refer to Summary of Changes Report -- October 2008.

This guideline is intended to assist in the prioritization of screening maneuvers, tests and counseling opportunities. It is not intended to diagnose or treat any condition. Consequently, once a health issue or condition has been uncovered, other ICSI guidelines (such as "Prevention and Management of Obesity [Mature Adolescents and Adults]" guideline) will take precedence during any further diagnosis and management.

Recommendations for preventive services for children and adolescents are presented in the form of an algorithm with 6 components, accompanied by detailed annotations. An algorithm is provided for Preventive Services for Children and Adolescents. Clinical highlights follow.

Class of evidence (A-D, M, R, X) definitions are provided at the end of the "Major Recommendations" field.

Preventive services in this guideline are grouped into four groups, based on their evidence of effectiveness and their priority ranking, as follows:

Level I Preventive Services that providers and care systems *must* deliver (based on best evidence). *(Annotation #2)*

Level II Preventive Services that providers and care systems *should* deliver (based on good evidence). *(Annotation #3)*

Level III Preventive Services for which the evidence is currently incomplete and/or high burden and low cost, therefore left to the judgment of individual medical groups, clinicians and their patients. *(Annotation #4)*

Level IV Preventive services that are not supported by evidence and not recommended. *(Annotation #5)*

Table 1: Child Preventive Services That Providers and Care Systems *Must* Deliver (Based on Best Evidence) (Level I)

Childhood Immunization Series

Routine Immunization Schedule for Infants, Children, and Adolescents

Vaccine	Birth	1 mo	2 mo	4 mo	6 mo	12 mo	15 mo	18 mo	24 mo	4-6 yr	11-12 yr	15-18 yr
DTaP			X	X	X	X				X	Tdap	
IPV			X	X	X					X		
MMR (MMRV)	Please see the NGC summary of the ICSI guideline Immunization.					X				X		
Varicella						X				X		X, verify second dose completed
Pneumococcal (PCV7)			X	X	X	X						
Hib			X	X	X	X						
Rotavirus			X	X	X							
Hep B Schedule 1	X	X			X							
Hep B Schedule 2		X		X	X							
Influenza					X (annually)							
Hep A						X, 2 doses minimum 6-month interval						
Meningococcal											X	X if previously not received
Human Papillomavirus (females)											X 3-dose series	X catch up if appropriate; 3-dose series

Please check manufacturer for specifications for dosing, as all intervals may not be needed.

For the latest information on vaccine shortages, please see the CDC Web site at: http://www.cdc.gov/vaccines/vac-gen/shortages/default.htm.

Service	0-2 yrs	2-6 yrs	7-12 yrs	13-18 yrs
Chlamydia				All sexually

Service	0-2 yrs	2-6 yrs	7-12 yrs	13-18 yrs
Screening				active women aged 25 years and younger
Neonatal Screening	Screen for hemoglobinopathies, phenylketonuria, hypothyroidism in the first week of life.			
Vision Screening		Recommended for children 4 years old and younger. By age 5, should be performed as part of preschool screening.		

Abbreviations: DTaP, diphtheria, tetanus, acellular pertussis; IPV, inactivated poliovirus vaccine; MMR, measles, mumps, and rubella; MMRV, measles, mumps, rubella and varicella vaccine; Hib, *Haemophilus influenzae* type b; Hep B, hepatitis B; Hep A, hepatitis A; Tdap, tetanus-diphtheria toxoid

Table 2: Child Preventive Services That Providers and Care Systems *Should* Deliver (Based on Good Evidence) (Level II)

Service	0-2 years	2-6 years	7-12 years	13-18 years
Hearing Screening	Screen for congenital hearing loss before one month.			
Infant Sleep Positioning and sudden infant death syndrome (SIDS) Counseling	Place infants to sleep on their back.			
Motor Vehicle Safety Screening and Counseling	Car seat when riding in a motor vehicle. Rear facing until 1 year and 20 pounds.	Car seat/booster seat/seat belt when riding in a motor vehicle.		
Obesity Screening		Record height, weight and body mass index (BMI) annually		
Tobacco Use Screening Prevention and	Establish tobacco use and secondhand exposure, offer tobacco cessation on a regular basis.			

Service	0-2 years	2-6 years	7-12 years	13-18 years
Intervention in Adolescents				

Preventive Services for Which the Evidence Is Currently Incomplete and/or High Burden and Low Cost, Therefore Left to the Judgment of Individual Medical Groups, Clinicians and Their Patients (Level III)

- Alcohol use screening and counseling
- Blood lead screening
- Cervical cancer screening
- Clinical breast exam screening
- Dental and periodontal disease counseling
- Developmental/behavioral assessment screening
- Domestic violence and abuse screening and counseling
- Dyslipidemia screening
- Dysplasia of the hip screening
- Folic acid chemoprophylaxis counseling
- Household and recreational injury prevention screening
- Infectious disease prevention screening
- Iron deficiency screening
- Nutritional counseling
- Preconception counseling
- Pregnancy prevention counseling
- Scoliosis screening
- Secondhand smoke exposure counseling
- Sexually transmitted infection (other than Chlamydia) counseling
- Sexually transmitted infection (other than Chlamydia) screening
- Skin cancer screening and counseling
- Undescended testicles screening

Preventive Services That Are Not Supported by Evidence and Not Recommended (Level IV)

Level IV services are those with low predictive value and/or uncertain beneficial action for true positives.

- Blood chemistry screening
- Child maltreatment screening
- Hemoglobin (for anemia screening five years and older)
- Tuberculin skin screening (for average risk)
- Urinalysis

Clinical Highlights

- All clinic visits—whether acute, chronic, or for preventive service —are opportunities for prevention. Incorporate appropriate preventive services at every opportunity. *(Annotation #1)*

- Address or initiate child preventive services that providers and care systems *must* deliver (based on best evidence) (Level 1). *(Annotation #2; Aims #1, 4, 6)*
    - Childhood immunization series
    - Chlamydia screening
    - Vision impairment screening
- Provide timely feedback, appropriate interventions, and optimal follow-up. *(Annotation #6)*

Preventive Services for Children and Adolescents Algorithm Annotations

1. **System Support Alert for Preventive Services**

   In order to provide consistent, high-quality care, the identification and delivery of preventive services needed by each patient require a systematic care team-based approach rather than relying solely on the memory and actions of individual clinicians. Components of system support include not only standing orders, task delegation, and automatic reminders, but concepts such as previsit planning, postvisit or between-visit outreach, decision support, system alerts, shared decision-making, patient activation, and care management *[R]*.

   In order to provide preventive services, it is first necessary to know which services are needed for individual patients. This includes both knowing when the last services were provided and an evaluation of individual risk factors. The National Guideline Clearinghouse (NGC) summary of the Institute for Clinical Systems Improvement (ICSI) guideline Primary Prevention of Chronic Disease Risk Factors can be a helpful starting point. As the dates of latest service and risk factors are identified, they should be recorded in the medical record in a way that facilitates visualization and action during visits.

   Nearly every patient contact for any reason should be used to identify and address preventive service needs. A system that supports preventive care should include both the patient and the whole care team. However, the work group recognizes that urgent or emergent visits or even routine visits may not always present preventive service opportunities. In order to facilitate the necessary prioritization of services when time is limited, the work group has separated effective services into two groups so that those services that have the largest impact and are most cost effective can be addressed first. This prioritization can be used during individual patient visits, as well as by the clinic or medical group in developing or improving practice systems for addressing the needs of whole clinic populations.

2. **Preventive Services That Providers and Care Systems *Must* Deliver (Based on Best Evidence). (Level I)**

   Level I preventive services are worthy of attention at every visit. Busy clinicians cannot deliver this many services in any single visit. However, with systems in place to track whether or not patients are up-to-date with the high-priority preventive services recommended for their age group, clinicians can offer the high-priority services as opportunities present.

Childhood Immunization Series (Level I)

Service

Providers must screen and immunize infants, children, and adolescents for age-appropriate vaccines.

Refer to Table 1 above for routine immunization schedule for infants, children, and adolescents.

Counseling Messages

Educate parents to immunize children according to age-appropriate schedule.

Related Guidelines

See the NGC summary of the ICSI Immunizations guideline.

Chlamydia Screening (Level I)

Services

Routine screening for chlamydia must be performed for all sexually active women aged 25 years and younger *[M]*, *[R]*.

Risk factors include:

- Having new or multiple sex partners
- Having a prior history of a sexually transmitted infection (STI)
- Not using condoms consistently and correctly

Refer to the original guideline document for information on burden of suffering.

Efficacy

The sensitivity of available screening tests for chlamydia infection is 80% and higher *[M]*. The U.S. Preventive Services Task Force does not recommend a specific screening test as studies have generally been performed in ideal circumstances in small populations with high prevalence rates. However, the U.S. Preventive Services Task Force concluded that nucleic acid amplification tests had higher sensitivities and specificities than older antigen detection tests and better sensitivities than culture *[M]*. Following detection, treatment with antibiotics approaches 100% efficacy. Two randomized studies have observed a decrease in pelvic inflammatory disease following chlamydia screening *[A]*, *[C]*.

Neonatal Screening (Level I)

Service

Screening in the first week of life for conditions that are initially asymptomatic but that result in serious health issues in the first month of life must be performed for hemoglobinopathies *[M]*, phenylketonuria *[M]*, and hypothyroidism *[M]* and other conditions according to state law.

Efficacy

Newborn screening for metabolic and other disorders is designed to detect infants with serious health conditions that are initially asymptomatic like inborn errors of metabolism and hypothyroidism. Early identification in many cases can avert a poor outcome for a child with various interventions, depending on the condition. There is strong evidence to support screening for hemoglobinopathies *[M]*, phenylketonuria *[M]*, and hypothyroidism *[M]*. Approximately 4,000 infants per year are identified with a condition through the newborn metabolic screening program. Each state varies on the test required to be done by law, but a uniform approach with all states using mass spectrometry is being promoted by various national groups (http://www.mchb.hrsa.gov/screening).

Counseling Message

All infants should receive a newborn metabolic screening test prior to hospital discharge, ideally when greater than 24 hours of age. Infants who receive screening before 24 hours of age should receive a repeat test before the second week of age.

System alerts should provide notice of positive results. Appropriate follow-up services must be provided for any child with a positive test.

Vision Impairment Screening (Level I)

Service

Vision screening must be performed for children four years old and younger. Screening should be used to detect amblyopia, strabismus, and defects in visual acuity. By age five, vision screening should be performed in the clinic or school as part of preschool screening *[M]*.

Efficacy

No direct evidence demonstrates that vision screening and early treatment in children lead to improved visual acuity and/or other outcomes such as school performance. The U.S. Preventive Services Task Force concluded that effectiveness of screening in preschool children is supported by indirect evidence that screening is effective in identifying strabismus and amblyopia, treatment of strabismus and amblyopia is effective, and more intensive screening leads to improved visual acuity compared to usual screening *[M]*. A single randomized control trial demonstrated that children randomized to more intensive screening between 8 and 37 months of age had a lower prevalence of severe amblyopia, and at 7.5 years of age lower prevalence of amblyopia after treatment *[A]*.

A prospective study of two matched cohorts of over 700 preschool children each in Ontario found that 3% of children screened before entry to school had moderate to severe vision impairment (visual acuity 20/50 or greater) compared to 6% of children in the matched cohort screened 6-12 months later, indicating that effectiveness of treatment is approximately 50% *[B]*. Those found to have vision problems using the illiterate E screening instrument were referred to their family doctor.

Counseling Messages

Normal objective vision screening performed at schools need not be repeated by clinics for average-risk, asymptomatic children *[A]*.

3. **Preventive Services That Providers and Care Systems *Should* Deliver (Based on Good Evidence (Level II)**

Level II services have been shown to be effective and should be provided whenever possible. If systems/care management teams are successful in keeping patients on time with high-priority services during illness and disease management visits, preventive services in the second group can be delivered.

Refer to Table 2 above for information on Level II preventive services.

Hearing Screening (Level II)

Service

Universal screening of infants for congenital hearing loss should be performed before one month of age *[M]*.

Efficacy

There is good evidence to recommend newborn hearing screening by otoacoustic emissions (OAE) and/or auditory brainstem response (ABR) prior to one month of age *[M]*. Screening for asymptomatic hearing impairment beyond age three is not recommended, although thorough follow-up should be provided of potential cases identified by symptoms or through school-based screening programs *[M]*.

The U.S. Preventive Services Task Force found good evidence to recommend universal newborn hearing screening. The testing methodology of a one- or two-step validated protocol showed high sensitivity (0.92) and specificity (0.98) for the two-step protocol (otoacoustic emissions followed by auditory brainstem response for those who failed otoacoustic emissions) *[C]*. There is good evidence that screening improves outcomes *[C]*. Harms of screening in this age group were felt to be minimal.

After age three, undetected hearing problems are rare, and the majority of cases can be identified by thorough examination of children with otitis media with effusion. There is insufficient evidence on the effectiveness of early detection in asymptomatic children *[M]*.

Infant Sleep Positioning and Sudden Infant Death Syndrome (SIDS) Counseling (Level II)

Service

Providers should ask how child is positioned for sleep. Inform parents of importance of back-sleeping position. Demonstrate the appropriate sleeping position when the patient is under medical care.

Refer to the original guideline document for information on efficacy of SIDS counseling and burden of suffering.

Counseling Message

Infants should be placed on their back for sleep. Side sleeping is no longer recognized as an alternative position. Parents should be advised about the appropriate sleeping position starting in the newborn nursery. Health care workers should be careful to place babies on their back to demonstrate to parents the appropriate sleeping position. Continued work to educate all potential caregivers of infants should be supported.

Infant sleep surfaces should be firm and there should be no loose bedding or soft objects around the infant.

Parents should be encouraged not to smoke, as a no-smoking environment has many important health benefits. Smoking during pregnancy has been shown to be associated with increased risk of SIDS *[R]*.

A proximate but separate sleeping environment and the use of pacifiers have been recommended *[R]*. These should be discussed with parents in the context of fully supporting breastfeeding.

Motor Vehicle Safety Screening and Counseling (Level II)

Service

Providers should ask the following:

Ask about the use of car seats, booster seats, and seat belts in the family.

Ask about helmet use in motorcycle riders.

Refer to the original guideline document for information on the efficacy of counseling and burden of suffering from motor vehicle injuries.

Counseling Messages

<u>Age Group - Birth to 9 Years</u>

- Install and use federally approved child safety seats.

- Discuss the fact that infants should face the rear of the vehicle until they are both 1 year of age and 20 pounds, and should not be placed in any seat with an air bag. (Best: middle rear seat) *[R]*.
- All children under four years of age must ride in appropriate car seat.
- Discuss the fact that children between four and nine years and weighing less than 80 pounds should be in a belt positioning booster seat *[R]*.

<u>All Individuals, Including Older Children and Drivers of Motor-Vehicles with Child Passengers</u>

- Discuss always wearing a safety belt when driving or riding in a car. Discuss the fact that 50% of death and disability from motor vehicle accidents can be prevented when passengers routinely wear seat belts.
- Do not drive or ride in a motor vehicle when the driver is under the influence of alcohol or drugs.
- Discuss the fact that passengers should not ride in cargo areas of any vehicle.
- The safest way to travel is to ensure that EVERYONE in the vehicle is correctly buckled up and that all children under age 13 ride in the back seat.
- Front passenger seats should be moved as far back as possible.
- Motorcycle riders should always wear helmets to reduce the risk of head injury.

Obesity Screening (Level II)

Service

Height, weight, and body mass index (BMI) should be recorded annually beginning at age two as part of a normal visit schedule.

Refer to the original guideline document for information on efficacy of obesity screening.

Counseling Messages

Encourage wholesome eating and physical activity.

<u>2-18 years</u>

Encourage:

- Consumption of fruits, vegetables, whole grains, and low-fat dairy products
- Limiting total fat, especially saturated, trans fats, and cholesterol
- Daily participation of 30 to 60 minutes of moderate to vigorous physical activity appropriate for age
- Regular meals

Discourage:

- Foods with added sugars
- Sweetened beverages
- Television and video games; limit to one hour per day *[R]*

Related Guidelines

ICSI's Technology Assessment Report on Treatment of Obesity in Children and Adolescents and the NGC summary of ICSI guideline Prevention and Management of Obesity (Mature Adolescents and Adults).

Tobacco Use Screening, Prevention, and Intervention in Adolescents (Level II)

Service

Providers should establish tobacco use and secondhand smoke exposure and reassess at every opportunity. (See section on Secondhand Smoke Exposure in the original guideline document).

Reinforce non-users to continue non-use of tobacco products.

Offer tobacco cessation services on a regular basis to all patients who use tobacco. (All forms of tobacco should be considered.)

Efficacy

Tobacco use is the single most preventable cause of death and disease in our society. There is good evidence that tobacco cessation interventions are best carried out when the entire clinical staff is organized to provide these services. The recommended clinical intervention incorporates the scientifically based concept of readiness stages for behavior change. It appears that these stages can focus the clinician message and make it more effective and feasible *[R]*.

Structured physician clinical-based smoking cessation counseling is more effective than usual care in reducing smoking rates *[A]*. The addition of telephone-based counseling may result in further improvements in cessation *[A]*. The success of this approach in the adult population has led to the adoption of the same approach in the pediatric population. Numerous effective pharmacotherapies for smoking cessation now exist. Except in the presence of contraindications, these should be used with all patients attempting to quit smoking.

Two treatment elements are effective for tobacco cessation intervention: social support for cessation and skills training/problem-solving. The more intense the treatment, the more effective it is in achieving long-term abstinence from tobacco.

The key components of successful tobacco cessation interventions are to:

- Ask about tobacco use and smoke exposure at every opportunity.

- Advise all users to quit.
- Assess willingness to make a quit effort.
- Assist users' willingness to make a quit attempt.
- Arrange follow-up.

Counseling Message

For children and adolescents aged 10 years and above and the child or adolescent is using tobacco:

- Emphasize short-term negative effects of tobacco use.
- Advise tobacco users to quit.
- Assess user's willingness to make a quit attempt.
- Provide counseling depending on readiness-to-quit stage. Provide a motivational intervention if the user is not ready to make a quit effort.
- Assist in quitting if ready to make a quit effort. Negotiate a quit date. Counsel to support cessation and build abstinence skills. Offer phone line for more assistance.
- Arrange follow-up to occur soon after the quit date.

For all ages:

- If accompanying household member uses tobacco, encourage member to quit. If the member user is interested in quitting, encourage a visit at his or her clinic for more cessation assistance.
- Provide educational and self-help materials.

4. **Preventive Services for Which the Evidence Is Currently Incomplete and/or High Burden and Low Cost, Therefore Left to the Judgment of Individual Medical Groups, Clinicians and Their Patients (Level III)**

Level III services either have insufficient evidence to prove their effectiveness and/or have important harms. For these preventive services in particular, decisions about offering the service should be made on a patient-by-patient basis. It is important to remember that insufficient evidence does not mean the service is not effective, but rather that the current literature is not sufficient to say whether or not the service is effective.

The list of Level III preventive services is provided at the beginning of the "Major Recommendations" field. Please refer to the original guideline document for information on Level III preventive services.

5. **Preventive Services That Are Not Supported by Evidence and Not Recommended (Level IV)**

Level IV services are those with low predictive value and/or uncertain beneficial action for true positives. They may also be a combination of insufficient evidence, potential for harm in treatment, no defined benefit and/or overuse.

The list of Level IV preventive services is provided at the beginning of "Major Recommendations" field. Please refer to the original guideline document for detailed information on Level IV preventive services.

6. **Care Coordination**

Although some individuals, following health risk assessments and screening tests, will initiate and sustain lifestyle changes on their own, most will require some degree of structured feedback and follow-up to achieve even modest improvements. Patient-centered health care systems should implement evidence-based changes to ensure consistent follow-up of conditions and risk factors, and support for healthier lifestyles.

Timely feedback

- Clear, strong personal message
- Include documentation of "lifestyle vital signs"

Appropriate interventions

- Integrate into decision support
- If screening and/or counseling results warrant treatment, see treatment guidelines

Optimal follow-up

- Plan for and anticipate upcoming preventive service needs. Electronic systems may be particularly beneficial for advanced ordering of services
- Providing preventive screening and counseling services
- If screening and/or counseling results warrant additional follow-up, proceed as indicated. See also treatment guidelines, as noted in the specific topic sections

Definitions:

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

CLINICAL ALGORITHM(S)

A detailed and annotated clinical algorithm is provided for Preventive Services for Children and Adolescents.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is classified for selected recommendations (see "Major Recommendations").

This guideline is a synthesis of recommendations from other Institute for Clinical Systems Improvement (ICSI) guidelines, primary evidence through literature reviews, other professional groups, particularly United States Preventive Services Task Force (USPSTF), and workgroup consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Improved use of a comprehensive approach to the provision of preventive services, counseling, education, and disease screening for average-risk, asymptomatic children and adolescents as demonstrated by:

- Increased percentage of patients who are up-to-date on immunizations
- Reduction in missed opportunities for administering immunization
- Decreased percentage of patients who are behind with recommended immunizations
- Increased percentage of sexually active female patients under the age of 25 who are screened for chlamydia
- Increased percentage of children age four and younger who have had vision screening
- Increased percentage of newborn patients who have had neonatal screening

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This clinical guideline is designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and is not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- This clinical guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situation and any specific medical questions they may have.
- This resource is intended to assist in the prioritization of screening maneuvers, testing, and counseling opportunities. It is not intended to diagnose or treat any condition. Consequently, once a health issue or condition has been uncovered, other guidelines will take precedence during any further diagnosis and management.
- It is the guideline development group's assumption that this guideline will primarily serve as a guide for medical groups to develop practice systems for their delivery. While individual clinicians are welcome to refer to this guide, the group does not expect that to be common and it certainly is not the best way to provide important services at high rates. Such an achievement clearly requires the establishment of systems that rely on standing orders, task delegation, reminders, and other automatic ways to identify needs and provide the services.
- While there is good evidence that modifying certain behaviors has positive health benefits (unsafe sex, accidents and safety, nutrition, physical activity), there is minimal evidence at present that screening for these conditions or

asking about them in the context of a risk assessment, even if followed by advice from a physician or other provider, will result in a change in behavior or positive outcomes. Therefore, this guideline includes:
    - Minimal recommendations for risk assessment to drive counseling for what are largely lifestyle issues
    - Specific recommendation that risk assessment and counseling about lifestyle not be considered suitable parameters for systematic implementation measures
    - Counseling messages for those clinicians who want to provide such counseling or whose patients express an interest in receiving this information
- The Preventive Services work group has begun a more thorough analysis of the evidence surrounding the use of the physical exam during the provision of preventive services for children. In many areas, there is insufficient evidence surrounding individual components of the physical exam. There are expert recommendations supporting individual components, but study of these elements has been limited by several factors, including the technical difficulty of consistent performance of some exam components, the relative low frequency of the diseases that screening is searching for and lacking, inconclusive or inadequate evidence of the effectiveness of intervention. The work group has begun to break out individual components of the exam into a separate section of this document. The group plans to expand that section in future revisions to more completely visit all of the components of physical examination. The group recognizes that changing these elements will be difficult for some providers and some patients. Therefore, the work group leaves the inclusion of specific components to the desires of individual medical groups. The Preventive Service work group encourages medical groups to focus on the provision of services that clearly have strongest evidence supporting their delivery.
- There is insufficient evidence to recommend one prevention visit schedule over another in terms of lowering mortality and morbidity, recognizing disability, promoting optimal growth and development, or helping patients achieve longer, more productive lives. Many services can be provided during routine visits. Similarly, an assessment of preventive services needs can be incorporated into any visit. The visit schedules recommended in these guidelines may augment a clinic's ability to assure provision of preventive services, but this may be unnecessary over time as effective clinic systems allow the services to be incorporated into other clinic visits.
- Evidence is insufficient to warrant ranking of recommendations for a number of preventive services. Refer to the "Major Recommendations" field and the original guideline document for more information.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for general implementation, a medical group can choose to concentrate on the implementation of that guideline. When four or more groups choose the same guideline to implement and they wish to collaborate with others, they may form an action group.

In the action group, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s). Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently, action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment, and tobacco cessation.

Detailed measurement strategies are presented to help close the gap between clinical practice and the guideline recommendations. Summaries of the measures are provided in the National Quality Measures Clearinghouse (NQMC).

Key Implementation Recommendations

The following system changes were identified by the guideline work group as key strategies for health care systems to incorporate in support of the implementation of this guideline.

1. The results of the health risk assessment questionnaire are used to identify needs for counseling and other preventive services.
2. Prioritization and implementation of preventive services should be part of the overall system and should include the following:
    - Practice preventive services at every clinic visit while addressing high priority services.
    - Individualize preventive services; regularly assess patient risk factors.
    - Provide education to patients/parents/guardians.

3. Develop a plan for staff and provider education around preventive services and organizational goals for implementation of preventive services (should also include education around "level" of service and the rationale behind each level).
4. Develop decision support processes in electronic medical record or for paper medical records to support physicians and staff in delivery of specific components of Level 1 services.
5. For those organizations with a paper medical record, create a "tickler" system that will generate reminders for preventive services in order to support completion of recommended Level I services.
6. Develop a "catch-up" plan for those patients who are on time with services by creating a tracking system that allows for periodic medical record audits to identify patient gaps in preventive services.
7. Develop a collaborative relationship with patients/parents/guardians in order to activate/motivate them to practice preventive health while staying on time.
8. Place throughout the facility patient education materials that focus on preventive services and the importance of each. Materials may include, but are not limited to, posters, pamphlets, videos and available Web sites, as well as services available in the community.

IMPLEMENTATION TOOLS

Clinical Algorithm
Patient Resources
Pocket Guide/Reference Cards
Quality Measures

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

RELATED NQMC MEASURES

- Preventive services for children and adolescents: the percentage of patients who are on time with recommended immunizations.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Preventive services for children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2008 Oct. 71 p. [141 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1995 Jun (revised 2008 Oct)

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health

System, Aspen Medical Group, Avera Health, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT Specialty Care, Fairview Health Services, Family HealthServices Minnesota, Family Practice Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Mille Lacs Health System, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Care System, North Suburban Family Physicians, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Pilot City Health Center, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, Saint Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Sioux Valley Hospitals and Health System, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians, Winona Clinic, Ltd., Winona Health

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GUIDELINE COMMITTEE

Preventive Services Steering Committee

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No work group members have potential conflicts of interest to disclose.

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GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Institute for Clinical Systems Improvement (ICSI). Preventive services for children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2007 Oct. 80 p. [152 references]

GUIDELINE AVAILABILITY

Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Preventive services for children and adolescents. Executive summary. Bloomington (MN): Institute for Clinical Systems Improvement, 2008 Oct. 1 p. Electronic copies: Available in Portable Document Format (PDF) from the Institute for Clinical Systems Improvement (ICSI) Web site.
- ICSI pocket guidelines. May 2007 edition. Bloomington (MN): Institute for Clinical Systems Improvement, 2007.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

PATIENT RESOURCES

The following is available:

- Preventive services for children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement, 2007 Oct. 55 p.

Electronic copies: Available in Portable Document Format (PDF) from the Institute for Clinical Systems Improvement (ICSI) Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This summary was completed by ECRI on July 10, 2000. The information was verified by the guideline developer on April 25, 2001. This summary was updated by ECRI on April 15, 2002 and most recently on March 14, 2003. The updated information was verified by the guideline developer on May 15, 2003. This summary was updated again by ECRI on March 22, 2004, November 10, 2004, December 7, 2004, December 29, 2005, and on January 25, 2007. This summary was updated by ECRI Institute on July 9, 2007 following the FDA advisory on RotaTeq (Rotavirus, Live, Oral, Pentavalent) vaccine. This NGC summary was updated by ECRI Institute on December 21, 2007 and January 9, 2009.

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